



September 30, 2020

Mr. Brian Groth
Town Planner
Town of Hudson
12 School Street
Hudson, NH 03051

Re: Town of Hudson Planning Board Review – Stormwater Design Review
Hudson Logistics Center, Lowell Road
Tax Map 239, Lot 1; Acct. #1350-949
Reference No. 03-0249.1930

Dear Mr. Groth:

Fuss & O'Neill, Inc. has reviewed the second submission of materials received between September 11, 2020 and September 24, 2020, related to the above-referenced project. The scope of this review letter is related to stormwater aspects of the project design only. Site plan, subdivision, and other review elements will be provided under separate cover.

This review is based on the recently adopted Stormwater Regulations (Chapter 290), Subdivision Regulations (Chapter 289), Site Plan Review Regulations (Chapter 275), Hudson's Engineering Technical Guidelines and Typical Details, and general engineering practices. Due to the size and complexity of this project we have separated our stormwater review comments based on the Subdivision and Site Plan plan sets prepared by the applicant.

The following items have outstanding issues:

7. Drainage Design/Stormwater Management

Subdivision Plan and Master Plan – Green Meadow Drive Plan Sets Prepared By Hayner/Swanson, Inc.

- a. *Former Fuss & O'Neill Comment: Hudson Regulation HR 289-18.B.4. We note that the creation of the cul-de-sac is creating what appears to be a "land-locked" wetland pocket. The applicant should review the need for an outlet structure from the center of the cul-de-sac and/or describe the intent of this design.*

Current Fuss & O'Neill Comment: The applicant has added CB102 and CB103 to two low points within the cul-de-sac. With rim elevations at approximately 130±, and the existing grade of the wetland at an approximate elevation of 128±, this will potentially result in impounding water of up to 2' over a wetland.

- i. It appears the drainage analysis treats this location as only a subcatchment, and does not treat this area as a pond. In this modeling the volume of the wetland is consistently filled with stormwater, and stormwater in will equal stormwater out. Given that very poorly drained and poorly drained soils of wetlands have minimal infiltration rates, infiltration is unlikely to occur at a practical rate. The applicant should clarify if infiltration is intended to occur, or is this area intended to be 2' deep standing water at all times.

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- ii. The applicant should review with the project wetland scientist and/or NHDES to ensure impounding up to an additional 2' of water over a wetland does not constitute an additional wetland impact.
 - iii. The applicant should clarify if underdrains are proposed and if so, how will installation of underdrains effect the wetland.
 - iv. Stormwater consistently at an elevation above the roadway gravels will have potential negative effects on the structural longevity of the roadway, related to both freeze/thaw as well as overall inability for the free-draining of the gravels. The applicant should provide additional information on this design, and review this design with the Town Engineer.
- g. *Former Fuss & O'Neill Comment: HR 290-10.A & B. Due to the multiple plan sets concurrently submitted, the applicant should list all related required Town, State, or Federal permits as well as related plan sets (as references) within the plan. This will ensure that if a contractor acquires only one of the multiple plan sets, they are fully aware of the connectivity of the plan sets.*
Current Fuss & O'Neill Comment: The applicant has updated the plan to state the Langan Set as a plan reference. We recommend the applicant adding a permits/approvals list, or refer directly to the page within the Langan set for associated permits/approvals.

Site Plan & Wetlands Conditional Use Applications Plan Set Prepared By Langan Engineering & Environmental Services, Inc.

- x. *Former Fuss & O'Neill Comment: HR 290-7.A.6. We note that the provided Infiltration Feasibility Report states "To be completed during construction". To ensure infiltration is an acceptable treatment upon this project, the applicant should update the Infiltration Feasibility Report as per Env-Wq 1504.13.*
Current Fuss & O'Neill Comment: The applicant has updated the report with the initial findings. We note that the applicant should continue to keep the Town informed of any further findings that may alter the drainage design.
- ab. *Former Fuss & O'Neill Comment: HR 290-10.A. The applicant should keep the Town informed of all communication with NHDES in relation to the required Alteration of Terrain, Shoreland, and Wetlands Permits to ensure NHDES comments do not alter drainage design/calculations.*
Current Fuss & O'Neill Comment: The applicant provided a "concurrent plan sets and permit applications" note on sheet CS001. We also suggest all approved project permits be provided in a similar table or manner as to list easily accessible appropriate permit numbers for easy reference.

The following items require Town evaluation or input:

Subdivision Plan and Master Plan – Green Meadow Drive Plan Sets Prepared By Hayner/Swanson, Inc.

- h. *Former Fuss & O'Neill Comment: Hudson Engineering Technical Guidelines and Typical Details (HETGTD) Section 930.1. The applicant should review the design on Plan Sheet 4 of 22, and note that CB 117 and CB 118 are illustrated to have less than 4.0' feet of cover. We note the design does not match the detail on Plan Sheet 15 of 22, illustrating a minimum of 4' of cover.*
Current Fuss & O'Neill Comment: The applicant has stated that they will seek approval of this deviation from the Town Engineer. The Town should confirm that they have reviewed this item and are comfortable with this design deviation.

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- i. *Former Fuss & O'Neill Comment: HETGTD Section 930.4. We note that the majority of the stormwater design utilizes pipe slopes of less than the required 2.0%. The applicant should review these pipe slopes with the Town Engineer to determine if these are adequate. Fuss & O'Neill would take no exception to the applicant requesting a waiver for these slopes if deemed necessary, as long as the applicant can illustrate that the drain line velocities are self-cleaning.*

Current Fuss & O'Neill Comment: The applicant has stated that they will seek approval of this deviation from the Town Engineer. The Town should confirm that they have reviewed this item and are comfortable with this design deviation.

Site Plan & Wetlands Conditional Use Applications Plan Set Prepared By Langan Engineering & Environmental Services, Inc.

- m. *Former Fuss & O'Neill Comment: HR 290-5.A.10. Due to the proximity of wetlands and other buffer zones to the proposed locations for installation of erosion control practices, the applicant should review the need for relief from this requirement by the Planning Board.*

Current Fuss & O'Neill Comment: The applicant has stated that discussions regarding the wetlands and other buffer zone impacts are part of an ongoing discussion with the Planning Board.

- ah. *Former Fuss & O'Neill Comment: HETGTD Section 920.3.12. We note that there are storm drains that exceed the listed maximum velocity of 10.0 fps. The applicant should review these velocities with the Town Engineer for acceptance. Fuss & O'Neill takes no exception if a waiver from this requirement is deemed necessary.*

Current Fuss & O'Neill Comment: The applicant has stated that a waiver has been requested from the Town.

- ai. *Former Fuss & O'Neill Comment: HETGTD Section 920.3.13. We note that there are storm drains that exceed the listed minimum velocity of 2.0fps. We request the applicant review these velocities with the Town Engineer for acceptance. Fuss & O'Neill takes no exception if a waiver from this requirement is deemed necessary.*

Current Fuss & O'Neill Comment: The applicant has stated that a waiver has been requested from the Town.

The following items are resolved or have no further Fuss & O'Neill input:

7. Drainage Design/Stormwater Management

Subdivision Plan and Master Plan – Green Meadow Drive Plan Sets Prepared By Hayner/Swanson, Inc.

- b. *Former Fuss & O'Neill Comment: HR 289-20.B.(2). The Regulation requires a catch basin at all four corners of roadways and interesting streets. The applicant is proposing to convert an existing catch basin to a drain manhole at the south side of the Green Meadows Drive/Lowell Road intersection and not proposing to install a new catch basin at the curb line of the widened road.*

Current Fuss & O'Neill Comment: The applicant has added a catch basin to the south side. No further Fuss & O'Neill comment.

- c. *Former Fuss & O'Neill Comment: HR 290-5.A.11. We note that the drainage run HW 90 to HW 91 is illustrated within the Langan Site Plan set, but is not illustrated within this roadway plan set. The applicant should coordinate all proposed stormwater drainage between all submitted plan sets.*

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Current Fuss & O'Neill Comment: The applicant has added HW 90 to HW 91 to the plan set. No further Fuss & O'Neill comment.

- d. *Former Fuss & O'Neill Comment: HR 290-6.A.1. The dimensions for the FES outlet for CES1 and CES2 is not listed within the scour hole details on plan sheet 15. The applicant should add all proposed outlet apron dimensions to the plan set.*

Current Fuss & O'Neill Comment: The applicant has added CES1 to the plan details. No further Fuss & O'Neill comment.

- e. *Former Fuss & O'Neill Comment: HR 290-6.A.1. The applicant should provide rip rap outlet and/or scour hole sizing calculations for all FES locations, including but not limited to HW 90/HW 91 and CES 1/CES 2.*

Current Fuss & O'Neill Comment: The applicant has added the recommended information to the plan set. No further Fuss & O'Neill comment.

- f. *Former Fuss & O'Neill Comment: HR 290-6.A.1. The applicant should provide the locations and appropriate related notes for the Erosion and Sediment BMPs illustrated within the Detail Sheets on the design sheets of the plan set.*

Current Fuss & O'Neill Comment: The applicant has added Erosion Controls to the plan set. No further Fuss & O'Neill comment.

- j. *Former Fuss & O'Neill Comment: We note that Stations 8+75 and 0+70± illustrate what appears to be approximately 6" of separation between proposed water and drain lines, where 18" is typical engineering standard. The applicant should review this separation with the Town Engineer and if acceptable provide appropriate means of frost protection for the water piping.*

Current Fuss & O'Neill Comment: The applicant has lowered the water. No further Fuss & O'Neill comment.

- k. *Former Fuss & O'Neill Comment: HETGTD Section 930.10. We note the Town Requirement of curb inlet drainage structures at all vertical sags.*

Current Fuss & O'Neill Comment: The applicant has added a detail to the plan set. No further Fuss & O'Neill comment.

- l. *Former Fuss & O'Neill Comment: HETGTD Section 930.13. We note that there appears to be a cut section between Stations 16+50± and 19-50±. The applicant should review and provide underdrain as required for this section of roadway.*

Current Fuss & O'Neill Comment: The applicant has added underdrain. No further Fuss & O'Neill comment.

Site Plan & Wetlands Conditional Use Applications Plan Set Prepared By Langan Engineering & Environmental Services, Inc.

- n. *Former Fuss & O'Neill Comment: HR 290-5.A.11. The applicant should utilize the most recent BMP worksheets available on the NHDES website. BMP worksheets provided appear to be outdated with dates of December of 2017 and March of 2019.*

Current Fuss & O'Neill Comment: Upon further review of the NHDES BMP worksheets for WQV and WQF are dated August of 2017. No further Fuss & O'Neill comment.

- o. *Former Fuss & O'Neill Comment: HR 290-5.A.11. The applicant should provide additional detail for the installation of the basin with notes similar to Env-Wq 1508.06.L (infiltration basin requirements). Additional detail should include but is not limited to: side slopes, bottom prep, bottom material, type of ground cover (capable of being inundated for prolonged periods of time), tilling of soil, do not compact soil, riprap weir dimensions (depth, width, length, stone gradation, and size), etc.*

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Current Fuss & O'Neill Comment: The applicant has provided details on Sheet CB504. No further Fuss & O'Neill comment.

- p. *Former Fuss & O'Neill Comment: HR 290-5.A.11. We note that Basin B6-2 is proposed to be constructed over an existing wetland, which typically results in a greatly reduced infiltration rate. The applicant should provide additional information for this basin, as well as other similar basins, regarding whether a soil amendment is proposed which will promote infiltration and treatment.*

Current Fuss & O'Neill Comment: The applicant has replaced the infiltration ponds with dry extended detention. BMP worksheets have been reviewed. No further Fuss & O'Neill comment.

- q. *Former Fuss & O'Neill Comment: HR 290-5.A.11. Basins A1-2, B1-2, and B6-2 illustrate the use of an underdrain outlet connected to the closed drainage system. With the use of an underdrain, the stormwater is not infiltrated, it simply offsets the peak discharge time, and is reintroduced into the stormwater system. The applicant should review the calculations to ensure this stormwater is intended to be "lost" by infiltration, or if it appropriately accounted for within the stormwater calculations.*

Current Fuss & O'Neill Comment: The applicant has removed the underdrain and added a gravel dry well. No further Fuss & O'Neill comment.

- r. *Former Fuss & O'Neill Comment: HR 290-5.A.11. If the above mentioned underdrain is designed to account for frozen ground conditions and is removed to meet stormwater calculations, the applicant should reassess frozen ground conditions and provide additional information on how these conditions will be accounted for.*

Current Fuss & O'Neill Comment: The applicant has added a gravel dry well to promote infiltration. No further Fuss & O'Neill comment.

- s. *Former Fuss & O'Neill Comment: HR 290-6.A.1. We note the Inspection and Maintenance manual references a Green Snow Pro applicator. The applicant should add this requirement to the plan set as well.*

Current Fuss & O'Neill Comment: The applicant has added the note to the plan set. No further Fuss & O'Neill comment.

- t. *Former Fuss & O'Neill Comment: HR 290-6.A.1. We note the requirement of Env-Wq 1507.05 "Channel Protection Requirements" is not compared within the Stormwater Management Report.*

Current Fuss & O'Neill Comment: The applicant has noted that the comparison is within Section 3.5 of the Stormwater Report. No further Fuss & O'Neill comment.

- u. *Former Fuss & O'Neill Comment: HR 290-6.A.8. We note the requirement for the applicant to coordinate a pre-construction meeting with the Town Engineer. This should be stated on the plans.*

Current Fuss & O'Neill Comment: The applicant has added a note to the plan set. No further Fuss & O'Neill comment.

- v. *Former Fuss & O'Neill Comment: HR 290-6.A.13. The applicant should provide rip rap outlet and/or scour hole sizing calculations within the sediment forebays.*

Current Fuss & O'Neill Comment: The applicant has listed sizes on the detail sheet. No further Fuss & O'Neill comment.

- w. *Former Fuss & O'Neill Comment: HR 290-6.A.13. The applicant should illustrate the location of the Construction Entrances upon all phased Erosion and Sediment Control Plans.*

Current Fuss & O'Neill Comment: The applicant has added this to the Soil Erosion and Sediment Control Plans. No further Fuss & O'Neill comment.

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- y. *Former Fuss & O'Neill Comment: HR 290-7.A.6. The Stormwater Management Report calculations/analysis illustrate that a proposed infiltration rate of 1.5 inches per hour is utilized. The applicant should provide additional conversion calculations to support the use of that infiltration rate.*
Current Fuss & O'Neill Comment: The applicant has stated the values source and added a factor of safety. No further Fuss & O'Neill comment.
- z. *Former Fuss & O'Neill Comment: HR 290-7.A.6. We note the provided GZA Geotechnical Report does not properly label the test pits and borings, due to what appears to be a "black wipeout". The applicant should provide a clear and readable location plan.*
Current Fuss & O'Neill Comment: The applicant has provided new Geotechnical Reports that are legible. No Fuss & O'Neill comment.
- aa. *Former Fuss & O'Neill Comment: HR 290-7.A.6. The applicant should provide the locations of the test pits upon both the Topographic Subdivision plan and the Grading and Drainage plans, in order to be able to properly analyze the proposed infiltration.*
Current Fuss & O'Neill Comment: The applicant has provided three geotechnical engineering studies with test pit locations. No further Fuss & O'Neill comments.
- ac. *Former Fuss & O'Neill Comment: HR 290-10.A. Due to the multiple plan sets submitted concurrently, the applicant should list all related required Town, State, or Federal permits as well as related plan sets (as references) within this plan. This will ensure if a contractor acquires only one of the multiple plan sets, they are fully aware of the connectivity of the plan sets.*
Current Fuss & O'Neill Comment: The applicant has added the recommended information to CD001. No further Fuss & O'Neill comment.
- ad. *Former Fuss & O'Neill Comment: HR 290-10.A. The applicant should to confirm and provide the pre-and post- subcatchment areas are equal in size per NHDES requirements.*
Current Fuss & O'Neill Comment: The applicant has noted this in the stormwater write up. No further Fuss & O'Neill comment.
- ae. *Former Fuss & O'Neill Comment: HR 290-10.A. We note the Stormwater Management Report does not directly state/illustrate the stormwater on Green Meadow Drive. After review of the calculations, it is evident that the proposed roadway and cul-de-sac is accounted for. Please provide more information within the write up to note that the roadway is accounted for within the overall stormwater analysis.*
Current Fuss & O'Neill Comment: The applicant has noted the recommended information in the stormwater write up. No further Fuss & O'Neill comment.
- af. *Former Fuss & O'Neill Comment: HR 290-10.A. We note that additional items will be required for the NHDES AoT Permit which could potentially effect the stormwater calculations and/or construction of the site. The applicant should provide additional detail related to the following items:*
 - i. *Former Fuss & O'Neill Comment: The applicant should review typical NHDES screening layers as well as the NHDES PFAS sampling maps. We note the close proximity of the site to the Hampshire Chemical Corp directly across the Merrimack River, which has four test locations that illustrate the site contains elevated levels of PFAS, considered higher than health based levels.*
Current Fuss & O'Neill Comment: The applicant should be prepared to provide additional information as needed to NHDES. No further Fuss & O'Neill comment.

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- ii. *Former Fuss & O'Neill Comment: We note the phasing of the site will be required to meet or request a waiver from the 5-acre disturbed area limit from NHDES Env-1505.03.*
Current Fuss & O'Neill Comment: The applicant has noted that a waiver has been requested from NHDES. No further Fuss & O'Neill comment.
- iii. *Former Fuss & O'Neill Comment: We note the phasing of the site will be required to meet or request a waiver from the 1-acre winter disturbed area limit from NHDES Env-1505.06(b)(1).*
Current Fuss & O'Neill Comment: The applicant has noted that a waiver has been requested from NHDES. No further Fuss & O'Neill comment.
- ag. *Former Fuss & O'Neill Comment: HR 290-10.B. The applicant should add the requirements for the EPA GCP, E-NOI, and SWPPP to the plan set.*
Current Fuss & O'Neill Comment: The applicant has added a note to the plan set. No further Fuss & O'Neill comment.

Also, please note that this review was carried out in accordance with applicable regulations and standards in place in New Hampshire at this time. Note that conditions at the site, including average weather conditions, patterns and trends, and design storm characteristics, may change in the future. In addition, future changes in federal, state or local laws, rules or regulations, or in generally accepted scientific or industry information concerning environmental, atmospheric and geotechnical conditions and developments may affect the information and conclusions set forth in this review. In no way shall Fuss & O'Neill be liable for any of these changed conditions that may impact the review, regardless of the source of or reason for such changed conditions. Other than as described herein, no other investigation or analysis has been requested by the Client or performed by Fuss & O'Neill in preparing this review.

Please feel free to call if you have any questions.

Very truly yours,


Steven W. Reichert, P.E.

SWR:

Enclosure

cc: Town of Hudson Engineering Division – File
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